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EXAMINER	
KUMAR, PANKAJ	

ART UNIT	PAPER NUMBER
2631	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/432,022	DONOHUE, JOHN E.	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7,8,13-23,30 and 31* is/are rejected.

7)☒ Claim(s) *4-6,9-12 and 24-29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. This is in response to brief filed on 11/28/2003 in which claims 1-31 are still pending. The finality has been withdrawn and applicant's amendments have been fully considered but the arguments are moot in view of the new grounds of rejection.

Response to Amendment

Claim Objections

2. Claims 23-31 are objected to because of the following informalities:

3. Claim 23 has "using the electronic selector circuit to release control of the amplifier input to follow the differential output when the input signal to the phase detector is restored." It is not clear whether control is being released from the amplifier input so that it does not follow the differential output or if the electronic selector circuit is being used to follow the differential output.

4. Claim 23 has "to to" when there should only be "to".

5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 15 to 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 15 recites the limitation "the phase locked loop" in multiple places but defines one "phased locked loop". Accordingly, there is insufficient antecedent basis for this limitation in the claim. Applicant may desire to change "phased locked loop" to "phase locked loop" in order to overcome this rejection.

9. Claims 16 to 22 are rejected since they depend on claim 15.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1, 2, 3, 7, 23, 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddy USPN 5,334,952 in view of Walley USPN 6,606,364 and further in view of Momtaz USPN 5,950,115.

12. As per claim l, Maddy 5334952 teaches a phase locked loop circuit, comprising: a differential phase detector (Maddy fig. 2: 203; paragraph 6: "Phase detector 203 generates a signal on line 221 that is proportional to the phase difference between the divided reference signal on line 219 and the divided output signal on line 226. Preferably the output signal from phase detector 203 is pulse width modulated (PWM) meaning that the phase difference is indicated by a pulse width of a pulsed output on line 221. Alternatively, phase detector 203 can output an analog signal.") that receives an input signal (Maddy fig. 2: 219) and a feedback signal (Maddy fig. 2: 226) and produces a differential output signal (Maddy fig. 2: 221); an electronic selector circuit (Maddy fig. 2: 217) having: at least one first input coupled to the differential

output of the phase detector (Maddy fig. 2: 221); and a second input (Maddy fig. 2: 231) that is responsive to a detected state of the input signal (Maddy fig. 3: 231 is responsive to the detected state of 219 via 221 and other signals); a loop filter circuit (Maddy fig. 2: 206) having an operational amplifier, the operational amplifier, having at least one amplifier output (not in Maddy but it is in Walley and it would have been obvious to have in Maddy as explained below), wherein the electronic selector circuit (Maddy fig. 2: 217) provides the differential output signal of the phase detector to the amplifier input (Maddy: output of phase detector is differential and it is eventually going to the amplifier inside the loop filter via other components); a voltage controlled oscillator (Maddy fig . 2: 209) coupled to an output of the operational amplifier (Maddy fig. 2: 209 coupled to output of loop filter which has opamp via other components) and providing an output frequency for the phased locked loop circuit (Maddy fig. 2: 224); and wherein the electronic selector circuit (Maddy fig. 2: 217) is operable to control the amplifier input to hold the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted (not in Maddy but would have been obvious over Momtaz as explained below).

Maddy does not teach an operational amplifier for a loop filter.

Walley teaches an operational amplifier for a loop filter.

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy to have the operational amplifier taught in Walley.

One would have been motivated to do so since Walley teaches that it is customary to do so in col. 1 lines 42-44: "loop filter 18 (customarily implemented as an operational amplifier - based circuit)"

Maddy does not teach holding the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted.

Momtaz teaches holding the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted (Momtaz col. 10 lines 16-65)

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy to teach the teaching of Momtaz.

One would have been motivated to do so for the reasoning taught in Momtaz – that when the link is interrupted, one loop is unable to compensate for the data frequency change exceeding the phase margin of the detector; thus, control has to be diverted to a second loop.

13. As per claim 2, Maddy in view of Walley and further in view of Momtaz teaches the circuit of claim 1, wherein the electronic selector circuit de-couples the amplifier input from the differential output (Maddy fig. 2: switch 217 decouples the 221 input via other components into 206 which would obviously have the opamp and couples 231 input via other components into 206) and holds the output frequency under an external command when the input signal to the phase detector is interrupted (Momtaz col. 10: change from one control loop to another control loop).

14. As per claim 3, Maddy in view of Walley and further in view of Momtaz teaches the circuit of claim 2. What the combination does not teach is wherein the electronic selector circuit holds a current signal input to the operational amplifier when a reference signal to the phase detector is interrupted.

Duckworth teaches wherein the electronic selector circuit holds a current signal input to the operational amplifier when a reference signal to the phase detector is interrupted.

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy in view of Walley and further in view of Momtaz with the teachings of Duckworth.

One would have been motivated to do so since one would want to keep the input phase aligned with the feedback phase.

15. As per claim 7, Maddy in view of Walley and further in view of Momtaz teaches the circuit of claim 2, wherein the electronic selector circuit re-couples the amplifier input to the differential output of the phase detector (Maddy fig. 2: switch 217 recouples the 221 input via other components into 206, which would obviously have the opamp, and decouples 231 input via other components into 206) when the input signal is restored (Momtaz col. 10).

16. As per claim 23, a method for preventing data errors in a communication system, comprising: coupling input data (Maddy fig. 2: 236, 201) to a phase locked loop circuit, wherein the phase locked loop includes: a differential phase detector (Maddy fig. 2: 203; paragraph 6: "Phase detector 203 generates a signal on line 221 that is proportional to the phase difference between the divided reference signal on line 219 and the divided output signal on line 226. Preferably the output signal from phase detector 203 is pulse width modulated (PWM) meaning that the phase difference is indicated by a pulse width of a pulsed output on line 221. Alternatively, phase detector 203 can output an analog signal.") that receives an input signal (Maddy fig. 2: 219) and a feedback signal (Maddy fig. 2: 226) and produces a differential output signal (Maddy fig. 2: 221); an electronic selector circuit (Maddy fig. 2: 217) having: at least one

first input coupled to the differential output of the phase detector (Maddy fig. 2: 221); and a second input (Maddy fig. 2: 231) that is responsive to a detected state of the input signal (Maddy fig. 3: 231 is responsive to the detected state of 219 via 221 and other signals); a loop filter circuit (Maddy fig. 2: 206) having an operational amplifier, the operational amplifier, having at least one amplifier input (not in Maddy but it is in Walley and it would have been obvious to have in Maddy as explained below), wherein the electronic selector circuit (Maddy fig. 2: 217) provides the differential output signal of the phase detector to the amplifier input (Maddy: output of phase detector is differential and it is eventually going to the amplifier inside the loop filter via other components); a voltage controlled oscillator (Maddy fig . 2: 209) coupled to an output of the operational amplifier (Maddy fig. 2: 209 coupled to output of loop filter which has opamp via other components) and providing an output frequency for the phased locked loop circuit (Maddy fig. 2: 224); using the electronic selector circuit (Maddy fig. 2: 217) to control the amplifier input to to (object to double to) hold the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted (not in Maddy but would have been obvious over Momtaz as explained below); and using the electronic selector circuit (Maddy fig. 2: 217) to release control of the amplifier input to follow the differential output (Maddy fig. 2: 217 switches so that the amplifier, which would obviously be inside the loop filter, input is from 231 and not from 221 since 221 follows the differential output as 221 is generated out of 203 has inputs of 219 and a version of the feedback signal 226) when the input signal to the phase detector is restored (not in Maddy. Momtaz teaches this in col. 10).

Maddy does not teach an operational amplifier for a loop filter.

Walley teaches an operational amplifier for a loop filter.

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy to have the operational amplifier taught in Walley.

One would have been motivated to do so since Walley teaches that it is customary to do so in col. 1 lines 42-44: "loop filter 18 (customarily implemented as an operational amplifier - based circuit)"

Maddy does not teach holding the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted.

Momtaz teaches holding the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted (Momtaz col. 10 lines 16-65)

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy to teach the teaching of Momtaz.

One would have been motivated to do so for the reasoning taught in Momtaz – that when the link is interrupted, one loop is unable to compensate for the data frequency change exceeding the phase margin of the detector; thus, control has to be diverted to a second loop.

17. As per claim 30, the method of claim 23, wherein the method further includes using the output frequency of the voltage controlled oscillator (Maddy fig. 2: 224) for providing the feedback signal to the differential phase detector (Maddy fig. 226 via 211).

18. As per claim 31, Maddy in view of Walley and further in view of Momtaz teach the method of claim 23, wherein the method further includes using the output frequency of the voltage controlled oscillator. What the combination does not teach is wherein the method further

includes using the output frequency of the voltage controlled oscillator as an output frequency for a system clock coupled to a number of system modules connected to the communication system. It would have been obvious to one skilled in the art at the time of the invention to modify the combination to teach system clock and communication system since it has been held that the selection of known material (in this case, system clock or communication system) based on its suitability for the intended use for prior art parts does not make the claimed invention patentable over that prior art (In re Leshin, 125 USPQ 416). Also, applicant appears compare the method or manner of intended use of the apparatus rather to delineating claimed structure not shown or made obvious by the prior art.

19. Claims 8, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddy USPN 5,334,952 in view of Walley USPN 6,606,364 and further in view of Duckworth USPN 5,686,903.

20. As per claim 8, teaches a phase locked loop circuit, comprising:
a differential phase detector (Maddy fig. 2: 203; paragraph 6: "Phase detector 203 generates a signal on line 221 that is proportional to the phase difference between the divided reference signal on line 219 and the divided output signal on line 226. Preferably the output signal from phase detector 203 is pulse width modulated (PWM) meaning that the phase difference is indicated by a pulse width of a pulsed output on line 221. Alternatively, phase detector 203 can output an analog signal.") that receives an input signal (Maddy fig. 2: 219) and a feedback signal (Maddy fig. 2: 226) and produces a differential output signal (Maddy fig. 2: 221); an electronic selector circuit having: at least one first input coupled to the differential output of the phase

detector (Maddy fig. 2: 221); and a second input (Maddy fig. 2: 231) that is responsive to a detected state of the input signal (Maddy fig. 3: 231 is responsive to the detected state of 219 via 221 and other signals); a loop filter circuit (Maddy fig. 2: 206) having an operational amplifier, the operational amplifier, having at least one amplifier output (not in Maddy but it is in Walley and it would have been obvious to have in Maddy as explained below), wherein the electronic selector circuit (Maddy fig. 2: 217) provides the differential output signal of the phase detector to the amplifier input (Maddy: output of phase detector is differential and it is eventually going to the amplifier inside the loop filter via other components); a voltage controlled oscillator (Maddy fig . 2: 209) coupled to an output of the operational amplifier (Maddy fig. 2: 209 coupled to output of loop filter which has opamp via other components) and providing an output frequency for the phased locked loop circuit (Maddy fig. 2: 224); and wherein the electronic selector circuit (Maddy fig. 2: 217) de-couples the amplifier input from the differential output (Maddy fig. 2: switch 217 decouples the 221 input via other components into 206 which would obviously have the opamp and couples 231 input via other components into 206) and holds the output frequency of the voltage controlled oscillator to a last received signal from the differential output when the input signal to the phase detector is interrupted (not in Maddy but it is in Duckworth and would have been obvious as explained below).

Maddy does not teach an operational amplifier for a loop filter.

Walley teaches an operational amplifier for a loop filter.

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy to have the operational amplifier taught in Walley.

One would have been motivated to do so since Walley teaches that it is customary to do so in col. 1 lines 42-44: "loop filter 18 (customarily implemented as an operational amplifier - based circuit)"

Maddy does not teach holding the output frequency of the voltage controlled oscillator to a last received signal from the differential output when the input signal to the phase detector is interrupted.

Duckworth teaches holding the output frequency of the voltage controlled oscillator to a last received signal from the differential output when the input signal to the phase detector is interrupted (Duckworth col. 30 lines 33-41; col. 32 lines 40-47).

It would have been obvious to one skilled in the art at the time of the invention to modify Maddy with the teachings of Duckworth.

One would have been motivated to do so since one would want to keep the input phase aligned with the feedback phase.

21. As per claim 13, Maddy in view of Walley and further in view of Duckworth teaches the circuit of claim 8, wherein the electronic selector circuit re-couples the amplifier input to the differential output of the phase detector (Maddy fig. 2: switch 217 recouples the 221 input via other components into 206 which would obviously have the opamp and decouples 231 input via other components into 206) when the input signal to the phase detector is restored (Duckworth cols. 30, 32).

22. As per claim 14, the circuit of claim 8, wherein the output frequency of the voltage controlled oscillator (Maddy fig. 2: 224) provides the feedback signal to the differential phase detector (Maddy fig. 2: 226 via 211).

Allowable Subject Matter

23. Claims 4, 5, 6, 9, 10, 11, 12, 24, 25, 26, 27, 28, 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

24. Claims 15 to 22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

25. The following is a statement of reasons for the indication of allowable subject matter: The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with the bold underlined portions:

26. As per claim 4, the circuit of claim 3, wherein the amplifier input includes a pair of amplifier inputs and wherein the electronic selector circuit holds a current signal input to the operational amplifier by ***coupling the pair of amplifier inputs at the same potential***.

27. Claim 5 depends on claim 4

28. As per claim 6, the circuit of claim 2, wherein ***the amplifier input includes a pair of amplifier inputs and wherein the electronic selector circuit includes a logic based selector***

circuit which holds the pair of amplifier inputs to an identical potential level when the input signal to the phase detector is interrupted.

29. As per claim 9, teaches the circuit of claim 8, wherein ***the amplifier input includes a pair of amplifier inputs and wherein the electronic selector circuit includes a switch which couples the pair of amplifier inputs together to hold the last received signal as a current signal input to the operational amplifier when the input signal is interrupted***.

30. As per claim 10, teaches the circuit of claim 8, wherein ***the amplifier input includes a pair of amplifier inputs and wherein the electronic selector circuit includes a logic based selector circuit which holds the pair of amplifier inputs to an identical potential level to hold the last received signal from the differential output at the operational amplifier when the input signal to the phase detector is interrupted***.

31. Claims 11-12 are objected to since they depend on claim 10.

32. As per claim 24, the method of claim 23, wherein ***the amplifier input includes a pair of amplifier inputs and wherein using the electronic selector circuit to hold the output frequency of the voltage controlled oscillator at a substantially constant frequency includes using the electronic selector circuit to de-couple the pair of amplifier inputs from the differential output and hold the output frequency of the voltage controlled oscillator to a last received signal from the differential output when the input signal to the phase detector is interrupted***.

33. Claims 25-28 are objected to since they are dependent on claim 24.

34. As per claim 29, the method of claim 23, wherein ***the amplifier input includes a pair of amplifier inputs and wherein using the electronic selector circuit to release control of the amplifier input to follow the differential output includes using the electronic selector circuit to re-couple the pair of amplifier inputs to the differential output of the phase detector when the input signal is restored*** (not in Maddy in view of Walley and further in view of Momtaz).

35. As per claims 15, ***a synchronization source, coupled to the number of traffic cards, having a selector coupled to an external synchronization source and a controller, wherein the selector provides an input signal to a phased locked loop circuit, wherein the phase locked loop circuit is coupled to the controller***

36. Claims 16-22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claims 16 to 22 depend on claim 15.

Conclusion

37. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Suzuki USPN 6,121,844 teaches PLL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Mon, Tues, Wed and Thurs after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.